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PATENT

CLAIMS

1. (currently amended) A method for determining an end point of a plasma etching process using ionized process gases for cleaning etching of a processing chambers that are is used for coating or etching processes during the manufacture of semiconductor components, comprising the steps of:

monitoring a DC bias voltage profile of a plasma generator during a cleaning etching process run, wherein the DC bias voltage is the voltage measured between ground and a decoupling electrode of the plasma generator disposed within the processing chamber, and wherein the voltage measurement points are selected so that the measured voltage profile has a maximum in the voltage profile ~~a clear signature of~~ at the an endpoint of the cleaning etching process indicating that the processing chamber is clean;

comparing the DC bias voltage to a predetermined value representing a clean processing chamber; and

terminating the plasma cleaning etching process by disconnecting a supply of process gases and deactivating the plasma generator when said DC bias voltage reaches said predetermined value.

2. (original) The method according to claim 1, wherein the DC bias voltage is measured continuously.

3. (original) The method according to claim 1, wherein the DC bias voltage is measured at discrete intervals.

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4. (Currently amended) A method for determining an end point of a plasma etching process using ionized process gases for cleaning etching of a processing chamber that is used for coating or etching processes during the manufacture of semiconductor components, comprising the steps of:

monitoring a DC bias voltage profile of a plasma generator during a cleaning etching process run, wherein the DC bias voltage is the voltage measured between ground and a decoupling electrode of the plasma generator disposed within the processing chamber, and wherein the voltage measurement points are selected so that the measured voltage profile has a maximum in the voltage profile at the endpoint of the cleaning etching process indicating that the processing chamber is clean;

comparing the DC bias voltage to a stored value representing a clean processing chamber, wherein the stored value is predetermined from a prior plasma cleaning etching process run; and

terminating the plasma cleaning etching process by disconnecting a supply of process gases and deactivating the plasma generator when said DC bias voltage reaches said predetermined value.

The method according to claim 1, wherein a DC voltage profile of a prior plasma cleaning etching process run is stored.

5. (currently amended) The method according to claim 4, wherein the stored measured DC voltage profile is compared with a previously stored DC voltage profile.

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6. (Currently amended) The method according to claim 5, wherein the comparison of the DC voltage profiles is performed for process runs with the same process gases and process parameters.
7. (original) The method according to claim 4, wherein a plurality of DC voltage profiles of plasma cleaning etching process are stored.
8. (Currently amended) The method according to claim 7, wherein the ~~stored~~ measured-DC voltage profile is compared with a previously stored DC voltage profile.
9. (Currently amended) The method according to claim 8, wherein the comparison of the DC voltage profiles is performed for process runs with the same process gases and process parameters.
10. (original) The method according to claim 1, wherein termination of the cleaning etching process is delayed for a selected time after said DC bias voltage reaches said predetermined value.